

PATENT

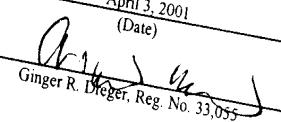
Case Docket No. UC053.001A  
Date: April 3, 2001

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s) : Saxon et al.  
Appl. No. : 09/770,169  
Filed : January 26, 2001  
For : IMMUNOGLOBULIN  
CLASS SWITCH  
RECOMBINATION  
Examiner : Unknown  
Group Art Unit : Unknown

I hereby certify that this correspondence and all  
marked attachments are being deposited with the  
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April 3, 2001  
(Date)

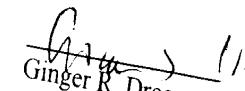
  
Ginger R. Dreger, Reg. No. 33,055

TRANSMITTAL LETTER  
ASSISTANT COMMISSIONER FOR PATENTS  
WASHINGTON, D.C. 20231  
ATTENTION: APPLICATION BRANCH

Dear Sir:

Enclosed for filing in the above-identified application are:

- (X) An Information Disclosure Statement.
- (X) A PTO Form 1449 with 61 references.
- (X) The Commissioner is hereby authorized to charge any additional fees which may be required, credit any overpayment, to Account No. 11-1410. A duplicate copy of this sheet is enclo<sup>se</sup>.
- (X) Return prepaid postcard.

  
Ginger R. Dreger  
Registration  
Attorney

UC053.001A

APR 13 2001

PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant : Saxon et al. ) Group Art Unit Unknown  
App. No. : 09/770,169 )  
Filed : January 26, 2001 )  
For : IMMUNOGLOBULIN CLASS )  
SWITCH RECOMBINATION )  
Examiner : Unknown )

**INFORMATION DISCLOSURE STATEMENT**

Assistant Commissioner for Patents  
Washington, D.C. 20231

Dear Sir:

Enclosed is a form PTO-1449 listing references that are also enclosed. This Information Disclosure Statement is being filed within three months of the filing date of this application, and no fee is required in accordance with 37 C.F.R. § 1.97(b)(1).

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: April 13, 2001

By: Ginger R. Dreger  
Ginger R. Dreger  
Registration No. 33,055  
Attorney of Record  
620 Newport Center Drive  
Sixteenth Floor  
Newport Beach, CA 92660  
(415) 954-4114

FORM PTO-1449	U S DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTY DOCKET NO UC053 001A	APPLICATION NO 09/770,169
INFORMATION DISCLOSURE STATEMENT BY APPLICANT		APPLICANT Saxon et al	
(USE SEVERAL SHEETS IF NECESSARY)		FILING DATE January 26, 2001	GROUP Unknown

U.S. PATENT DOCUMENTS							
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE (IF APPROPRIATE)

FOREIGN PATENT DOCUMENTS							
EXAMINER INITIAL		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION
							YES

EXAMINER INITIAL	OTHER DOCUMENTS (INCLUDING AUTHOR, TITLE, DATE, PERTINENT PAGES, ETC.)						
1	Aruffo et al., "The CD40 Ligand , gp39, is Defective in Activated T Cells from patients with X-Linked Hyper-IgM Syndrome" <u>Cell</u> 72:291-300 (1993)						
2	Ballantyne et al., "Antibody class Switch recombinase activity is B cell stage specific and functions stochastically in the absence of 'targeted accessibility' control" <u>Int. Immunol.</u> 7:963-974 (1997)						
3	Borggrefe et al., "A B-cell-specific DNA Recombination Complex" <u>J. Biol. Chem.</u> 273:17025-17035 (1998)						
4	Bottaro et al., "S region transcription per se promotes basal IgE class switch recombination but additional factors regulate the efficiency of the process" <u>EMBO J.</u> 13:665-674 (1994)						
5	Casellas et al., "Ku80 is required for immunoglobulin isotype switching" <u>EMBO J.</u> 17:24-4-2411 (1998)						
6	Cherry and Baltimore, "Chromatin remodeling directly activates V(D)J recombination" <u>Proc. Natl. Acad. Sci. USA</u> 96:10788-10793 (1999)						
7	Coffman et al., "Mechanism and Regulation of Immunoglobulin Isotype Switching" <u>Adv. Immunol.</u> 54:229-270 (1993)						
8	Cogne et al., "A Class Switch Control Region at the 3' End of the Immunoglobulin Heavy Chain Locus" <u>Cell</u> 77:737-747 (1994)						
9	Daniels and Lieber, "RNA:DNA complex formation upon transcription of immunoglobulin switch regions: implications for the mechanism and regulation of class switch recombination" <u>Nucleic Acids Res.</u> 23:5006-5011 (1995)						

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*EXAMINER: INITIAL IF CITATION CONSIDERED. WHETHER OR NOT CITATION IS IN CONFORMANCE WITH MPEP 609; DRAW LINE THROUGH CITATION IF NOT IN CONFORMANCE AND NOT CONSIDERED. INCLUDE COPY OF THIS FORM WITH NEXT COMMUNICATION TO APPLICANT.	

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10	Daniels and Lieber, "Strand specificity in the transcriptional targeting of recombination at immunoglobulin switch sequences" <u>Proc. Natl. Acad Sci. USA</u> 92:5625-569 (1995)
11	Dunnick et al., "DNA sequences at immunoglobulin switch region recombination sites" <u>Nucleic Acids Res.</u> 21:365-372 (1993)
13	Esser and Radbruch, "Immunoglobulin Class Switching: Molecular and Cellular Analysis" <u>Annu. Rev. Immunol.</u> 8:717-735 (1990)
14	Gauchat et al., "Structure and Expression of Germline $\epsilon$ Transcripts in Human B Cells Induced by Interleukin 4 to Switch to IgE Production" <u>J. Exp. Med.</u> 172:463-473 (1990)
15	Gritzammer, "Molecular Aspects of Heavy-Chain Class Switching" <u>Crit. Rev. Immunol.</u> 9:173-299 (1989)
16	Harriman et al., "Immunoglobulin Class Switch Recombination" <u>Annu. Rev. Immunol.</u> 11:361-384 (1993)
17	Harriman et al. "IgA Class Switch in $I\alpha$ Exon-deficient Mice" <u>J. Clin. Invest.</u> 97:477-487 (1996)
18	Hu et al. "Regulation of Germline Promoters by the Two Human Ig Heavy Chain 3' $\alpha$ Enhancers" <u>J. Immunol.</u> 164:6380-6386 (2000)
19	Jack et al., "Looping out and Deletion Mechanism for the Immunoglobulin Heavy-Chain Class Switch" <u>Proc. Natl. Acad. Sci. USA</u> 85:1581-1585 (1988)
20	Jung et al., "Shutdown of Class Switch Recombination by Deletion of a Switch Region Control Element" <u>Science</u> 259:984-987 (1993)
21	Kawabe et al., "The Immune Responses in CD40-Deficient Mice: Impaired Immunoglobulin Class Switching and Germinal Center Formation" <u>Immunity</u> 1:167-178 (1994)
22	Kinoshita et al., "Target Specificity of Immunoglobulin Class Switch Recombination Is Not Determined by Nucleotide Sequences of S Regions" <u>Immunity</u> 9:849-858 (1998)
23	Laffan and Luzzatto, "Anomalous Rearrangements of the Immunoglobulin Heavy Chain Genes in human Leukemias Support the Loop-out Mechanism of Class Switch" <u>J. Clin. Invest.</u> 90:2299-2307 (1992)
24	Leung and Maizels, "Regulation and Targeting of Recombination in Extrachromosomal Substrates Carrying Immunoglobulin Switch Region Sequences" <u>Mol. Cell. Biol.</u> 14(2):1450-1458 (1994)
25	Leung and Maizels, "Transcriptional regulatory elements stimulate recombination in extrachromosomal substrates carrying immunoglobulin switch-region sequences" <u>Proc. Natl. Acad. Sci. USA</u> 89:4154-4158 (1992)
26	Li et al., "Developmental Specificity of Immunoglobulin Heavy Chain Switch Region Recombination Activities" <u>Mol. Immunol.</u> 34:201-208 (1997)

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EXAMINER INITIAL	OTHER DOCUMENTS (INCLUDING AUTHOR, TITLE, DATE, PERTINENT PAGES, ETC.)
27	Liu et al., "Within Germinal Centers, Isotype Switching of Immunoglobulin Genes Occurs after the Onset of Somatic Mutation" <u>Immunity</u> 4:241-250 (1996)
28	Lopez et al., "Promotion of double-strand break repair by human nuclear extracts preferentially involves recombination with intact homologous DNA" <u>Nucleic Acids Res.</u> 15:6813-6826 (1987)
29	Lopez et al., "Directional recombination is initiated at a double strand break in human nuclear extracts" <u>Nucleic Acids Res.</u> 20:501-506 (1992)
30	Lorenz et al., "Switch Transcripts in Immunoglobulin Class Switching" <u>Science</u> 267:1825-1828 (1995)
31	Manis et al., "Ku70 Is Required for Late B Cell Development and Immunoglobulin Heavy Chain Class Switching" <u>J. Exp. Med.</u> 187:2081-2088 (1998)
32	Marcu et al., "A model for the molecular requirements of immunoglobulin heavy chain class switching" <u>Nature</u> 298:87-89 (1982)
33	Matsuoka et al., "Switch Circular DNA Formed in Cytokine-Treated Mouse Splenocytes: Evidence for Intramolecular DNA Deletion in Immunoglobulin Class Switching" <u>Cell</u> 62:135-144 (1990)
34	Mills et al., "Human Ig Sγ Regions and Their Participation in Sequential Switching to IgE" <u>J. Immunol.</u> 155:3021-3036 (1995)
35	Mills et al., "Sequences of human immunoglobulin switch regions: implications for recombination and transcription" <u>Nucleic Acids Res.</u> 18:7305-7316 (1990)
36	Nikaido et al., "Switch region of immunoglobulin Cμ gene is composed of simple tandem repetitive sequences" <u>Nature</u> 292:845-848 (1981)
37	Ott et al., "Immunoglobulin heavy chain switch region recombination within a retrieval vector in murine pre-B cells" <u>EMBO J.</u> 6:577-587 (1987)
38	Pan et al., "Regulation of the promoter for human immunoglobulin γ3 germ-line transcription and its interaction with the 3'α enhancer" <u>Eur. J. Immunol.</u> 30:1019-1029 (2000)
39	Pfeiffer and Vielmetter, "Joining of nonhomologous DNA strand breaks in vitro" <u>Nucleic Acids Res.</u> 16:907-924 (1988)
40	Qiu et al., "Iα exon-replacement mice synthesize a spliced HPRT-Cα transcript which may explain their ability to switch to IgA. Inhibition of switching to IgG in these mice" <u>Int. Immunol.</u> 11:37-45 (1999)
41	Rabbitts et al., "Transcription enhancer identified near the human Cμ immunoglobulin heavy chain gene is unavailable to the translocated c-myc gene in a Burkitt lymphoma" <u>Nature</u> 306:806-809 (1983)

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42	Rolink et al., "The SCID but Not the RAG-2 Gene Product Is Required for $\mu$ -Se Heavy Chain Class Switching" <u>Immunity</u> 5:319-330 (1996)
43	Sewell et al., "Molecular cloning of the human T-lymphocyte surface CD2 (T11) antigen" <u>Proc. Natl. Acad. Sci. USA</u> 83:8718-8722 (1986)
44	Snapper et al., "The Immunoglobulin Class Switch: Beyond "Accessibility"" <u>Immunity</u> 6:217-223 (1997)
45	Stavnezer, J., "Molecular Processes that regulate Class Switching" <u>Current Topics in Microbiol. &amp; Immunol.</u> 245:127-168 (2000)
46	Stavnezer et al., "Switch Recombination in a Transfected Plasmid Occurs Preferentially in a B Cell Line That Undergoes Switch Recombination of Its Chromosomal Ig Heavy Chain Genes" <u>J. Immunol.</u> 163:2028-2040 (1999)
47	Stavnezer et al., "Immunoglobulin heavy-chain switching may be directed by prior induction of transcripts from constant-region genes" <u>Proc. Natl. Acad. Sci. USA</u> 85:7704-7708 (1988)
48	Stavnezer, J., "Antibody Class Switching" <u>Adv. Immunol.</u> 61:79-90 (1996)
49	Stavnezer-Nordgren and Sirlin, "Specificity of immunoglobulin heavy chain switch correlates with activity of germline heavy chain genes prior to switching" <u>EMBO J.</u> 5:95-102 (1986)
50	Takahashi et al., "Structure of Human Immunoglobulin Gamma Genes: Implications for Evolution of a Gene Family" <u>Cell</u> 29:671-679 (1982)
51	Thacker et al., "A mechanism for deletion formation in DNA by human cell extracts: the involvement of short sequence repeats" <u>Nucleic Acids Res.</u> 20:6183-6199 (1992)
52	Tsukamoto et al., "Silencing factors participate in DNA repair and recombination in <u>Saccharomyces cerevisiae</u> " <u>Nature</u> 388:900-903 (1997)
53	Von Schwedler et al., "Circular DNA is a product of the immunoglobulin class switch rearrangement" <u>Nature</u> 345:452-455 (1990)
54	Xu et al., "Mice Deficient for the CD40 Ligand" <u>Immunity</u> 1:423-431 (1994)
55	Xu et al., "Replacement of germ-line $\epsilon$ promoter by gene targeting alters control of immunoglobulin heavy chain class switching" <u>Proc. Natl. Acad. Sci. USA</u> 90:3705-3709 (1993)
56	Zelazowski et al., "Regulation of Ku Expression in Normal Murine B Cells by Stimuli That Promote Switch Recombination" <u>J. Immunol.</u> 159:2559-2562 (1997)
57	Zhang and Cheah, "Cell-Free Recombination of Immunoglobulin Switch-Region DNA with Nuclear Extracts" <u>Clin. Immunol.</u> 94:140-151 (2000)
58	Zhang et al., "A selective defect in IgG2b switching as a result targeted mutation of the $\lambda$ $\gamma$ 2b promoter and exon" <u>EMBO J.</u> 12:3529-3537 (1993)

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59	Zhang et al., "Switch Circles from IL-4-Directed $\epsilon$ Class Switching from Human B Lymphocytes" <i>J. Immunol.</i> 152:3427-3435 (1994)
60	Zhang et al., "Secondary Deletional Recombination of Rearranged Switch Region in Ig Isotype-Switched B Cells" <i>J. Immunol.</i> 154:2237-2247 (1995)
61	Zhang et al., <i>Regulation of class switch recombination of the immunoglobulin heavy chain genes</i> . In: <i>Immunoglobulin Genes</i> , Second Edition, T. Honjo and F.W. Alt, eds.(1995), pp 235-265

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